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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,619

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EXAMINER

COHEN, JODI F

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,619	Applicant(s) TAKADA ET AL.	
	Examiner Jodi Cohen	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 7, 10 and 14 recite the limitations, “(measured by a Brookfield rotary viscometer using spindle No.7, at 2 rpm, at 20° C) in low shear rate region (0.43 sec^{-1}) and the points C and D being at 20-2000 poise poises of an apparent viscosity (measured by an apparent viscosity meter according to JIS K2220, at 20 ° C) in high shear rate region (783 sec^{-1})” It is unclear if the limitations within the parentheses are meant to further limit the claims. For the purpose of this examination these limitations are considered to be optional.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda JP 06 198152 (Note: specific column and line number references cited below are made with respect to Okuda et al. US 6,538,040 which is employed as a English language equivalent for the noted Okuda JP 06 198152 document) over Cobbs Jr. et al. (US 4,778,631) (referred to as '631 herein after) and further evidenced by Polymer Technology, as viewed at <http://polymer.w99of.com/tag/shear-stress/> on August 2, 2011 (referred to as Polymer Technology herein after).

Regarding claims 7, 10, 14, '040 discloses a method for producing an expandable material using a piston pump (45A or 45B) having a cylinder (451) and a piston (452) adapted to reciprocally move within the cylinder to effect a suction stroke and a discharge stroke. '040 further discloses the method for producing an expandable material comprising the steps of:

supplying a gas at a pressure higher than that of the high-viscosity material it is being supplied to, wherein pressure of the gas supplied to the cylinder under a predetermined pressure by affecting the suction stroke is 0.1-5 kg/cm² (Col 6; lines 47-50)

discharging the foamed material from a dispersing pipe and;

operating the piston pump device via a control device (19) (Col3; line 34-Col 4; line 68);

supplying a high-viscosity paste material to the cylinder to mix with the low-pressure gas and produce a gas-mixed material. '040 does not disclose the composition or properties of the high-viscosity paste material however; '040 specifically teaches

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using a hot-melt material such as the polymer described in JP 63-264327 also published as Cobbs Jr. et al. (US 4,778,631) (Col 1; lines 43-46).

'040 discloses a piston pump and specifically teaches using a hot-melt material such as that in '631 thus it would have been obvious to one of ordinary skill in the art to use the hot-melt adhesive of '631 in the method discussed above because '040 specifically cites the use of the hot-melt adhesive described in '631 in the piston pump '040.

It has been established that it would have been obvious to one of ordinary skill in the art to use the adhesive of '631 in the method of producing an expandable material as taught by '040, '631 discusses using a high viscosity hot melt thermoplastic material to produce an expandable paste and is considered a one-pack-type curing paste material for use as an adhesive, sealant, coating, or gasketing material after being mixed and foamed such as by the pump of '040 (Col 4; line 58-Col 5; line 47). '631 teaches the hot melt has high-viscosities range from 22 poises-350 poises, 500 poises to above 10,000 poises (Col 2; lines 22-27, Col 3; lines 11-20). '631 clearly discloses the hot-melt material containing viscosities within the ranges of those in applicant's claims, however '631 and '040 are silent about the shear rate at these viscosities. '631 states that "high viscosities on the order of 50,000 to above 1,000,000 cps can be achieved with commercially acceptable throughput rates and with minimal and acceptable temperature rise of the polymeric material into and through a low energy input mixer..." (Col 3; lines 13-23). Thus the effect of shear rate on viscosity at given temperatures is a known relationship for polymers, this is further evidenced by Polymer

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Technology, and thus it would have been obvious to one of ordinary skill in the art through routine experimentation to alter the shear rate in order to achieve the desired high viscosities '040 specifies are necessary to operate with the piston pump and thus obtain a desired product. The court has held that one a variable, i.e. shear rate, has been established as a result-effective-variable or a variable that achieves a specific result, i.e. viscosity, it would have been obvious to one of ordinary skill in the art to optimize said variable, shear rate, through routine experimentation in order to obtain a desired result, or specific viscosity (See MPEP 2144.05). One of ordinary skill in the art, given the piston pump of '404 which specifies the use of the hot melt material of '631 would know the effect of shear rate on the viscosity of the hot melt '631 and thus optimize the shear rate to obtain a desired high viscosity as taught by '404 and '631.

Regarding claims 8-9 and 11-13, in further view of the discussion above, the method and apparatus of '404 is specifically for discharging a foamed hot-melt type adhesive product from the dispersing pipe by the use of curable polymers such as described in '631 (Col 1; lines 43-46 of '404 and Col 6; lines 5-53 of '631).

Regarding claims 15-16, '631 discloses a thermosetting material that can be cured by heat, a catalyst or other chemical means. A person of ordinary skill in the art would appreciate this to include vulcanization-crosslinking and photo/radiation-curable material, especially wherein '631 goes on to include examples of thermosetting, thermoplastic materials to include polyethylene, polypropylene, polybutylenes, polystyrenes, polyvinyl chloride, polyolefin, polyester, epoxy polymers, acrylic resins and specifically room temperature vulcanizing rubbers (Col 6; lines 20-52).

Response to Arguments

6. Applicant's arguments filed 05/21/2010 have been fully considered but they are not persuasive.

7. The majority of applicant's arguments are moot in view of the grounds of rejection above however; in response to applicant's statement that

“the [Examiner's] presumed "knowledge" of how "to obtain the desired viscosity" of a substance given its "shear rate" is of no use when the "shear rate" is not given--as in the present case where the prior art "does not teach," and "is silent about," the "shear rate" limitation "in claim 7,"

'631 states that “high viscosities on the order of 50,000 to above 1,000,000 cps can be achieved with commercially acceptable throughput rates and with minimal and acceptable temperature rise of the polymeric material into and through a low energy input mixer...” (Col 3; lines 13-23) Thus it is clear that viscosities may be altered due to shear rate and temperature. This is further evidenced by the newly added reference in the grounds of rejection above of Polymer Technology which shows the relationships between viscosity and shear rate for polymers. In contrast to what the applicant states, the shear rates do not need to be given in order for the shear rate and viscosity to be established as result-effective-variables which may then be optimized. MPEP 2144.05 states;

A particular parameter must first be recognized as a result-effective variable, **i.e., a variable which achieves a recognized result**, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.

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It is clear that one of ordinary skill in the art can determine the necessary shear rate necessary to obtain desired viscosities from the statement of '631 above and further evidenced by Polymer Technology.

On page 4 of applicant's remarks applicant states, the viscosity decreases more/faster at the upper limit than it does at the lower limit as the shear rate increases thus the relationship is not linear. Examiner never implied that the relationship is or need be linear simply that the viscosity is a function of the shear rate and the parameters may be optimized so that one skill in the art operating the piston taught by '040 (which is identical to that in the present claims) with the polymers such as those taught by '631 may obtain a desired viscosity and arrive at the present invention.

Applicant specifically argues that,

"The rejection merely refers to disclosure in Cobbs that (allegedly) meets these limitations, i.e., Cobbs ('631)"discloses using a high viscosity..., adhesive to produce an expandable [foam], wherein the adhesive has high viscosities ranging from 22 poises-400 poises, 500 poises to above 10,000 poises" (Office Action mailed 06/09/2009, page 4). Failure to account for the "50-30000 poises" and "20-2000 poises," renders the rejection untenable."

It is unclear what exactly applicant is intending in the above statement, but it appears applicant is arguing that the examiner has not accounted for every range within the graph incorporated into the claims and that Cobbs is specifically excluding viscosities not mentioned. Cobbs clearly teaches using polymers with viscosities within the disclosed viscosity ranges, there is no evidence that Cobbs is meaning to exclude viscosities in between the two ranges disclosed, just that Cobbs is focusing on two polymers with said disclosed ranges of viscosities. Furthermore, not all of the values

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within the range claimed must be disclosed in order to meet the limitations of the present claim as is recited in MPEP 2144.05 and repeated below for convenience;

"In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists...Similarly, a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties...

"[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a prima facie case of obviousness." ...

A range can be disclosed in multiple prior art references instead of in a single prior art reference depending on the specific facts of the case..."

It is also noted that Okuda teaches modifying the amount of gas and pressure as well as shear rate to obtain the desired foaming ratio (Col 10; line 39-Col 13; line 11) wherein the foaming ratio is representative of the density of the cells. It would be obvious to one of ordinary skill in the art in view of the known relationship shear rate and viscosity and the teachings of Okuda, to alter the shear rate through routine experimentation in order to achieve the desired high viscosities Okuda specifies are necessary to operate with the piston pump to obtain a desired product with the desired foaming ratio. Thus one would not *necessarily* obtain the foamed product as claimed by the present invention however one of ordinary skill in the art would *expect* to obtain the same product and more importantly, one of ordinary skill in the art in view of the known

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relationships between shear rate and viscosity would be able to modify the pump as Okuda teaches such modifications, such as shear rate, to obtain the desired product.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jodi Cohen whose telephone number is 571-270-3966. The examiner can normally be reached on Monday-Friday 7:00am-5:00pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Daniels can be reached on 571-272-2450. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason L Lazorcik/
Primary Examiner, Art Unit 1791

/Jodi F. Cohen/
Examiner, Art Unit 1791

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